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SUPPORT AND SALES

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COMPLETE   SPECIFICATION
FOR   A   STANDARD   PATENT

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Invention Title:	PRIZE AWARDING SYSTEM

The   following   statement   is   a   full   description   of   this invention, including the best method of performing it known to us

PRIZE AWARDING SYSTEM

This invention relates to a prize awarding system. In particular, the invention is directed to method and apparatus for awarding a prize to players of
5   gaming machines, wherein the probability that the player of a gaming machine will win the prize is dependent upon the amount bet on that gaming machine during an elapsed period.

BACKGROUND ART

10   An electronic gaming device (EGD), such as a poker machine, provides its player with the opportunity to win cash or other prizes. To entice more persons to play EGDs and/or to render them more exciting, it is known to link EGDs electronically in a network, with each
15   EGD contributing a proportion of its turnover to a pooled jackpot. The EGDs in a network may be located on one site, or spread over several remote sites. Since a larger number of EGDs contribute to the jackpot, the jackpot can have a higher value and/or be won more often
20   than single machine jackpots.

In a typical progressive linked jackpot system, one or more EGDs contribute a percentage of turnover to a pool (either on a local or external network). Each time an EGD is played, it tests for a particular winning
25   combination. If that combination is achieved, the EGD is awarded the pool. A key aspect of this arrangement is that each game played has the same probability of a jackpot win.

This arrangement has traditionally been used by
30   casinos but its popularity is diminishing due to the introduction of EGDs featuring multiple line and multiple credits per line wagering options. If a player elects to play multiple credits per line, the win probability would no longer be proportional to the wager. That is, the win
35   probability would be the same regardless of the number of credits wagered on the line. This is considered a major disincentive to wagering multiple credits per line. This arrangement also requires the EGD to provide special

typically connected to an External Feature Game Controller (EFGC) via a communications network. Each EGD informs the EFGC of credits bet and a proportion of the credits bet is added to the external jackpot pool. This
5 pool is typically seeded with a starting value.

As each game is played (and only when a game is played), the EGD tests for the occurrence of a random "win" event whose probability is a function of the credits bet *on that particular game*. If the EGD detects
10 the random event, the EFGC is informed. The EGD then typically enters a feature game where the winning amount is determined. The EFGC is informed of the win and in some cases will transmit the value of the win to the EGD's credit meter. In other cases, the EGD will be
15 locked up until the jackpot is paid manually by an attendant. The greater the wager per game the greater is the probability of a win on that game.

A disadvantage of this arrangement is that it is not easily applied to an existing EGD installation.
20 Each EGD must be fitted with special software with a means of determining and detecting the random event *per game*. Alternatively, a communications-based Central Feature Game Controller (CFGC) may theoretically be employed which has a means of determining and testing for
25 the random event per game on behalf of each EGD, based on the credits bet on each game.

Many jurisdictions have mandated the use of specialised communications networks designed to collect EGD data and to provide a means of external control over
30 the EGDs. Some operators of these networks have implemented their own jackpot awarding systems utilising these networks. These networks however, cannot guarantee that each EGD's data will be collected in synchronisation with each EGD's *game cycle*. Further, many of these
35 communications networks do not even support the collection of "credits bet" data from EGDs. In some cases there may be over 6 games played between data

held periodically. Prior to each prize draw, the probability of each gaming machine winning that draw is calculated.

In another form, the invention provides a
5 gaming system comprising

at least one gaming machine;

control means connected to the gaming machine(s), the control means being adapted to conduct a series of prize draws in each of which each gaming
10 machine has an opportunity to win a prize on a non-deterministic basis; and

means for determining the winning probability of each gaming machine at each prize draw,

characterised in that the probability of each
15 gaming machine winning a prize draw is dependent on at least some of the amount wagered on that gaming machine during an elapsed period.

In yet another form, the invention provides a gaming machine having
20 means for effecting a prize draw to award a prize on a non-deterministic basis, and

means for determining the probability of the gaming machine winning the prize,

characterised in that the probability of the
25 gaming machine winning the prize is dependent on at least some of the amount wagered on the gaming machine during an elapsed period.

Preferably, the probability is related to the total wagered amount recorded during the elapsed period.
30 The elapsed period is typically a rolling or sliding period of time, preceding each prize draw.

Draws may be held at periodic intervals which are shorter than the sliding period of time. In that

to a communications network 11, typically running over RS485, Fibre Optic, Ethernet, or other suitable data transmission cable. The communications network 11 has an EGD monitoring device 12, such as a site controller or

5   polling front-end processor. The EGD monitoring device will be referred to as the monitoring system. The monitoring system 12 collects financial and other information from the EGDs. This information is commonly referred to as "meters".

10   The monitoring system 12 contains a Special Prize Presentation Controller Task which in this embodiment, is a jackpot controller 13 capable of maintaining one or more jackpot pools. The jackpot controller 13 displays the current value of each jackpot

15   pool on one or more jackpot displays 14. These displays may be remote from the EGDs, either connected to the communications network 11 or to the jackpot controller 13 directly.

The gaming system may optionally include an

20   alternative or additional jackpot controller 13A with its associated display 6. The EGDs may also have local jackpot displays 15 which may be operated by the jackpot controller(s), via the communication network.

The jackpot controller 13 calculates and

25   manages the jackpot pools from the information provided to it by the monitoring system 12. The only meter required by the jackpot controller from the monitoring system is the current value of the turnover meter of each EGD. The turnover meter is represented in local base

30   currency units (e.g. cents). The turnover meter usually indicates the *accumulated* turnover, e.g. credits bet, since the EGD was commissioned. The jackpot controller calculates from the received turnover meter reading, the change in turnover since the last time the turnover meter

35   was read. This is the primary figure used for all jackpot calculations.

For each jackpot, the jackpot controller maintains a prize pool. This prize pool is a calculated

Table 2 shows the changes in turnover meter recorded for the same three EGDs at 10:29:30, i.e. after a further 10 seconds have elapsed. The relevant window of time or Record Period is now that period between
5   10:29:00 and 10:29:30.

During the further 10 second period, several recorded values aged to a point where they were greater than 30 seconds old, and were therefore discarded. For each EGD one new change in turnover was recorded. The
10   discarded turnover values are shown in Table 3.

It can be seen from the tables that the rolling Record Period allows for variations in operational characteristics by collating all turnover changes during a sliding period. This allows all machines to have a
15   fairer record of activity than individual change in turnover meter figures. Individual turnover figures per EGD may be recorded at varying frequencies. By running a sliding window any variation in operational characteristics can be normalized.

20   In this embodiment, the method of determining the winner of a jackpot employs a second time window, known as the Draw Period. The Draw Period is the duration between attempts at awarding the jackpot, or in other words, the duration between opportunities for an
25   EGD to win the jackpot, known as jackpot "draws". To ensure that no turnover change is excluded from the draw processing, the Draw Period can equal, but not exceed the Record Period.

The probability that an EGD will win a jackpot
30   draw depends on a calculated scaling factor. In this embodiment, the scaling factor is based on estimated turnover during the Draw Period which is calculated by taking, for each EGD, the total turnover in the Record Period, and dividing it by the number of Draw Periods per
35   Record Period. (Because a division is involved, any fractional cent of the result is counted as one whole scaling unit). That is, based on actual turnover during the whole Record Period, an estimated or average turnover

win band size, because division is involved, all results are rounded up to the next whole digit in the range. If the random number generated falls within the winning band and the attempt at awarding the prize succeeds.

5 Otherwise the attempt fails. Table 6 gives the varying win band sizes for the probabilities given in Table 5.

If an EGD wins a draw, the EGD is placed into a winning mode and the prize won is advertised on the displays 14, 15. The act of awarding a prize need not

10 necessarily terminate the draw processing and it is possible for another EGD to be selected as a winner in its draw. If there are multiple winners, the prize pool is preferably paid to the first detected winner and all other winners are awarded the reset or starting value of

15 the pool. Alternatively, the prize pool is apportioned between all the winners.

Table 7 shows the assumptions and configuration options of a typical high win rate, small prize Jackpot Pool.

20 Table 8 gives the operational characteristics of a jackpot so configured, operating as described by this embodiment.

For the embodiment having the parameters and operational characteristics specified in Table 8 and

25 Table 9, a typical sequence of events for the jackpot would be as follows:

Referring to the flow chart of Fig. 2, the jackpot is started at its reset or starting value ($50.00). Players bet credits on the EGDs, and

30 contribute to the accumulated turnover on each EGD. A percentage of the change in turnover meters of all EGDs since the start of the jackpot is added to the jackpot pool such that after 2 hours of play, the Jackpot would be expected to be worth approximately $75.00 ($50.00 +

35 $25.00 from contributions). Any change in turnover meter for each EGD would be recorded as it is calculated in the sliding 30-second time window. All jackpot pool displays are updated with the new value reflecting added

with a fixed number of attempts, say 10,000 and all attempts occur every draw. The attempts are apportioned to the EGDs based on their relative turnovers over the Record Period.

5   Further, the probability of winning the jackpot may be based on only some of the amount wagered in the Record Period, such as the maximum bet on any one game in that period, or the amount wagered in the Record Period statistically conditioned to remove abnormally small or
10   large bets.

      The calculated probability of a jackpot win can be displayed on the EGD displays 15. These displays can include a graphical indicator that informs the player of the chance of winning the Jackpot, based on average
15   turnover over the Record Period for each EGD. The EGD display may be a rumbling volcano. The higher turnover over time played on the EGD, the fierier the volcano becomes. These displays can be controlled by the jackpot controller so that the volcano erupts on the EGD that
20   wins the prize. Further, a leader board can be shown on an external display 14, that lists the EGDs in order from highest probability of win to lowest. These displays are designed to enhance player appeal and to create atmosphere for the Linked jackpot Game.

25   In a second preferred embodiment, when an EGD wins a draw, the EGD is informed of the win and instructed to enter a second Screen Feature Game for the purpose of determining the Jackpot Prize to be awarded. At this time, all eligible Jackpot pool values on display
30   are suspended, i.e. held at their current values and no longer visibly increment. Preferably, the display then enters a special "About to win a Jackpot Mode" to heighten excitement. Once the player has completed the second screen feature and the jackpot prize has been
35   determined, the winning EGD informs the Jackpot Controller of the claimed prize. The Jackpot Controller then updates all jackpot pools other than the winning jackpot to their current value (using a percentage of all

are released.

Various modifications can be made to the foregoing without departing from the scope of the invention. For example, each EGD can maintain its own sliding Record Period and Draw Period, independent of any other EGD in the Jackpot Pool. When an EGD determines that it is going to win, it informs the controller to suspend all jackpots at their current values and presents the second screen feature game to the player automatically. Once the second screen feature game is complete and a prize has been determined, the EGD informs the Jackpot Controller of the determination. The Jackpot Controller then pays the claimed prize to the player and resets it. It also allows the other jackpot pools to increment again, and adds any contributions from turnover that occurred while the pool was suspended.

In a system where the Jackpot Pools may not be suspended due to limitations in the communications network, the second Screen Feature Game can be equipped with a timeout that forces a determination should the player not play within a reasonable time frame. This prevents one player effectively robbing some or all of the subsequent jackpot prize from another player by excessively delaying the claim on the prize pool.

The above described embodiments of a prize awarding system have several advantages over the prior art systems, including

- Each eligible player or gaming machine has the opportunity of winning a prize, with the probability of a win being dependent upon the amount of betting activity on that machine over a recent period, and not just the last game. This provides a fairer outcome as machines with a higher average turnover during that period have a higher win probability than machines with a lower average turnover during the same period even though the latter machines may have had a higher wager on the last game.

- The trigger for a draw is not a function of individual

Table 1 : Recorded Turnover for 30 Seconds

EGD	Time of Read	Change in Turnover
1	10:29:20	$4.35
	10:29:12	$5.15
	10:29:04	$3.45
	10:28:58	$1.05
	TOTAL	$14.00
2	10:29:18	$0.36
	10:29:11	$0.59
	10:29:04	$0.47
	10:28:58	$0.11
	10:28:51	$0.73
	TOTAL	$2.26
3	10:29:19	$1.10
	10:29:08	$0.90
	10:28:57	$1.50
	TOTAL	$3.50

Table 2 : Turnover Recorded after a Further 10 Seconds

EGD	Time of Read	Change in Turnover
1	10:29:28	$2.15
	10:29:20	$4.35
	10:29:12	$5.15
	10:29:04	$3.45
	TOTAL	$15.10
2	10:29:25	$0.94
	10:29:18	$0.36
	10:29:11	$0.59
	10:29:04	$0.47
	TOTAL	$2.36
3	10:29:30	$2.40
	10:29:19	$1.10
	10:29:08	$0.90
	TOTAL	$4.40

Table 6 : Win Band Size for Variable Probabilities with a maximum range of 0 - 4294967295

Draw Time	EGD#	Variable Win Probability	Win Band Size
10:29:20	1	0.1400%	0 − 6012954
	2	0.0228%	0 − 979252
	3	0.0351%	0 − 1507533
10:29:30	1	0.1511%	0 − 6489694
	2	0.0237%	0 − 1017907
	3	0.0441%	0 − 1894080

Table 7 : Assumptions and Desired Configuration of a Jackpot Pool

No of EGDs	10
Average Daily Turnover per EGD	$1500.00
Hours in a Trading Day	18
Reset Value of the Prize	$50.00
Desired Maximum Value of the Prize	$150.00
Average Increase to RTP% of the connected EGDs	3%
Turnover Sliding Window	30 Seconds
Draw Time	10 Seconds

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1.   A method of awarding a prize in a gaming system comprising at least one gaming machine, characterised in that the probability of each gaming machine winning the

5   prize is dependent upon at least some of the amount wagered on that gaming machine during an elapsed period.

2.   A method as claimed in claim 1 wherein the probability is related to the total wagered amount recorded during the elapsed period.

10   3.   A method as claimed in claim 1 wherein the probability is related to the maximum amount wagered on a game during the elapsed period.

4.   A method as claimed in any preceding claim, wherein the elapsed period is a rolling or sliding period

15   of time.

5.   A method as claimed in any preceding claim, including the step of conducting a series of prize draws and, prior to each prize draw, calculating the probability of each gaming machine winning that draw.

20   6.   A method as claimed in claim 5, wherein the elapsed period is a predetermined period preceding each draw, further comprising the steps of recording amounts wagered on each gaming machine and calculating the probability of each gaming machine winning that draw from

25   amount(s) recorded during the predetermined period.

7.   A method as claimed in claim 6, wherein the draws are conducted at periodic intervals of time, the period between draws being no greater than the predetermined period.

15. A method as claimed in claim 14 wherein the gaming system includes a plurality of gaming machines, and the probabilities are displayed in relative format.

16. A method as claimed in any preceding claim, wherein each gaming machine is an electronic gaming device.

17. A gaming system comprising

at least one gaming machine;

control means connected to the gaming machine(s), the control means being adapted to conduct a series of prize draws in each of which each gaming machine has an opportunity to win a prize on a non-deterministic basis; and

means for determining the winning probability of each gaming machine at each prize draw,

characterised in that the probability of each gaming machine winning a prize draw is dependent on at least some of the amount wagered on that gaming machine during an elapsed period.

18. A gaming system as claimed in claim 17 wherein the probability is related to the total wagered amount recorded during the elapsed period.

19. A gaming system as claimed in claim 18 or 19, wherein the elapsed period is a rolling or sliding predetermined period of time prior to each prize draw.

20. A gaming system as claimed in claim 19, wherein the control means includes means for recording during the predetermined period amounts wagered on each gaming machine.

28.   A gaming machine as claimed in claim 24 to 27, having display means to present a graphical representation of the probability of winning the prize draw.

5   29.   A method of awarding a prize substantially as hereinbefore described with reference to the drawings.

30.   A gaming system substantially as hereinbefore described with reference to the drawings.

10   DATED this   Ninth   day of August 1999

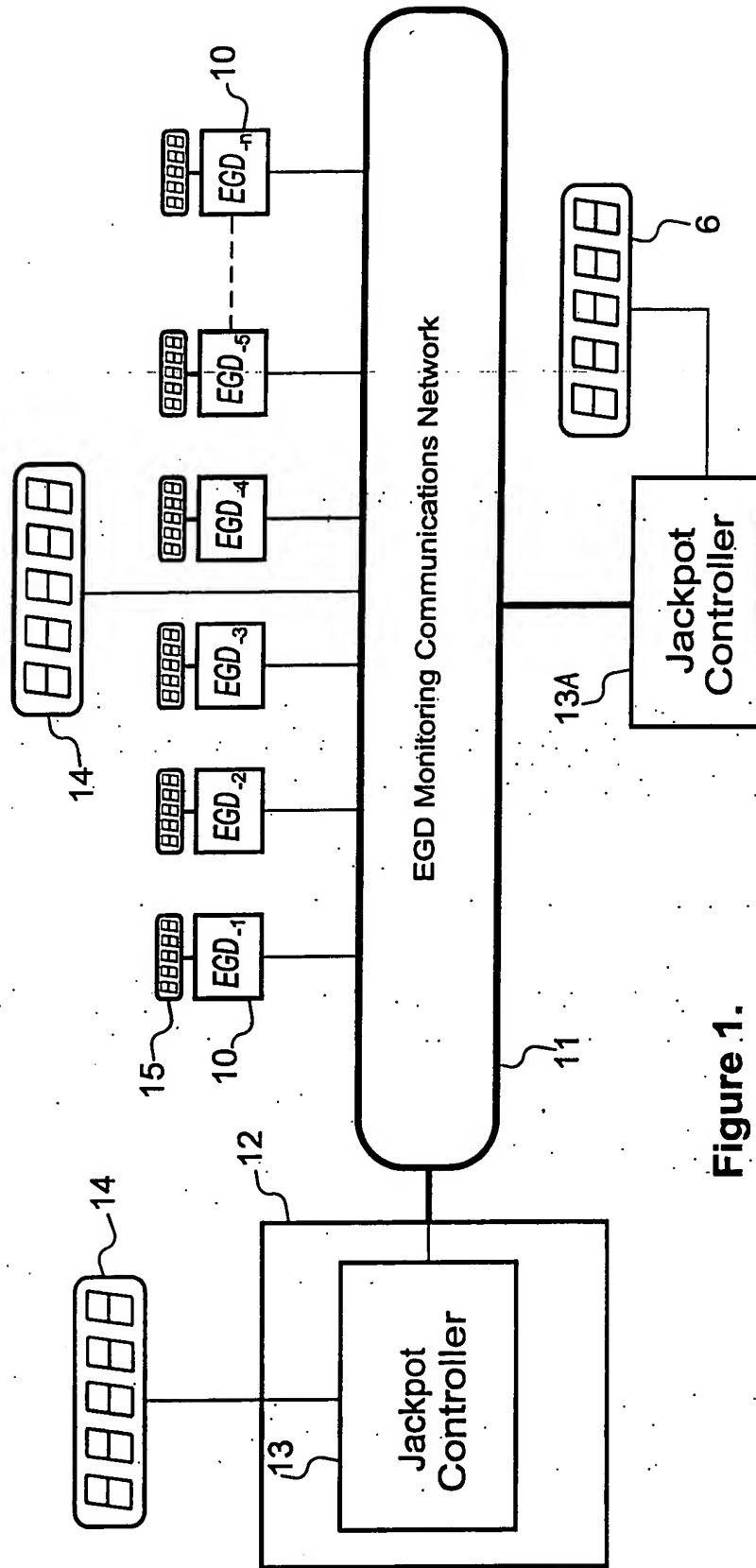NEURIZON PTY LTD

By their patent attorneys

Cullen & Co.

Figure 1.

Figure 3.

```
                              ( Start )
                                 │
              ┌──────────────────────────────────────┐
              │   Initialise Draw Time Window Timer   │
              └──────────────────────────────────────┘
                                 │
                                 │◄──────────────────────────┐
              ┌──────────────────────────────────────┐        │
              │        Start Draw Time Timer          │        │
              └──────────────────────────────────────┘        │
                                 │                             │
                  ┌──────────────▼                             │
                  │            ╱   ╲                           │
           NO     │          ╱       ╲                         │
        ◄─────────┘        ╱  Draw Time ╲                      │
                           ╲   Elapsed?  ╱                     │
                             ╲         ╱                       │
                               ╲     ╱                         │
                                 │ YES                         │
              ┌──────────────────────────────────────┐        │
              │  Calculate First EGD's Turnover        │        │
              │      During the Time Window            │        │
              └──────────────────────────────────────┘        │
                                 │                             │
                  ┌──────────────▼                             │
                  │                                            │
              ┌──────────────────────┐                        │
              │     Calculate EGD     │                        │
              │    Win Probability    │                        │
              └──────────────────────┘                        │
                                 │                             │
   ┌──────────────┐         ╱   ╲                              │
   │  Calculate   │       ╱       ╲                            │
   │    Next      │     ╱  Test If  ╲     NO                   │
   │ EGD's Turnover│    ╲  EGD has   ╱───────┐                 │
   │   During     │     ╲   Won?    ╱        │                 │
   │ Time Window  │       ╲       ╱          │                 │
   └──────────────┘         ╲   ╱            │                 │
          ▲                   │ YES          │                 │
          │          ┌──────────────────┐   │                 │
          │          │   Set EGD's Win   │   │                 │
          │          │  Flag to "Won"    │   │                 │
          │          └──────────────────┘   │                 │
          │                   │◄─────────────┘                 │
          │              ╱   ╲                                 │
          │            ╱       ╲                               │
          │  YES     ╱ More EGD's ╲                            │
          └────────  ╲   To       ╱                            │
                     ╲  Check?   ╱                             │
                       ╲       ╱                               │
                         ╲   ╱                                 │
                           │ NO                                │
                           └─────────────────────────────────┘
```